



# Reconditioned Equipment

**Howard Herndon  
Electrical Professional  
Consultants**

# Learning Objectives

- What is Reconditioned Equipment
- What does the NEC say
- What recondition equipment is not to be used
- Where can we use Recon Equipment
- How do we protect your company



# Reconditioned Equipment

- Estimated to be a \$500 M industry each year
- The electrical reconditioning industry has received a bad name over the years
  - Selling used, old stock, damaged, stolen equipment as new
  - Internet sells, such as E-Bay
  - Companies selling equipment with no liability insurance
  - Resellers and Manufacturers afraid of liability
  - Methods of proving equipment's acceptability for service was very expensive
  - Industry not enforcing method of proving that equipment suitable for use
- PEARL Started in 1997
- PEARL introduced an ANSI standard EERS in 2018
  - Standard Inspection methodology
  - Standard Testing Procedures
  - Technician Training and certification programs



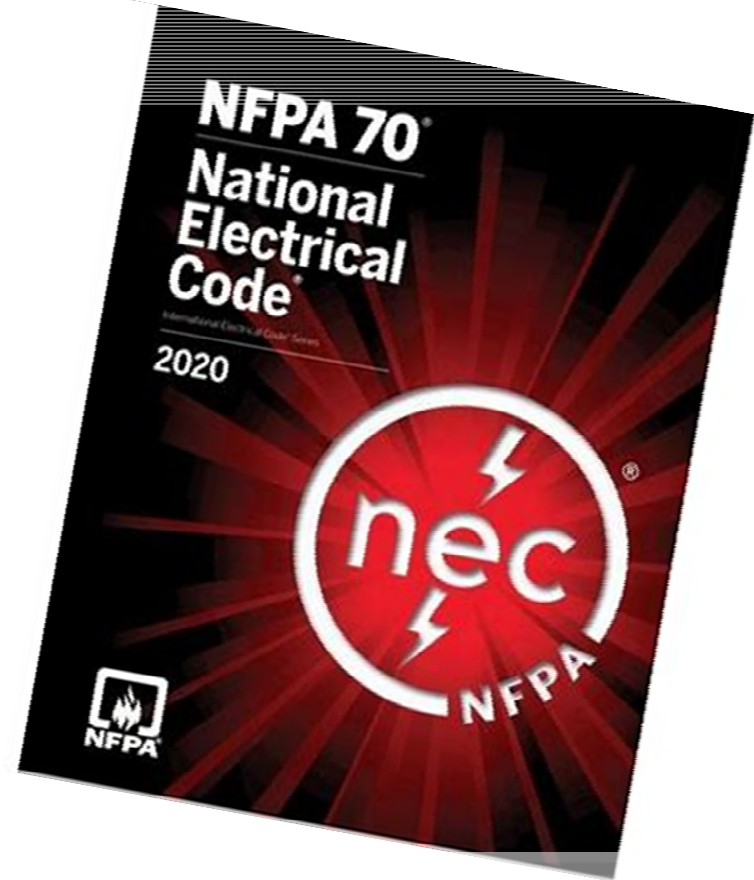
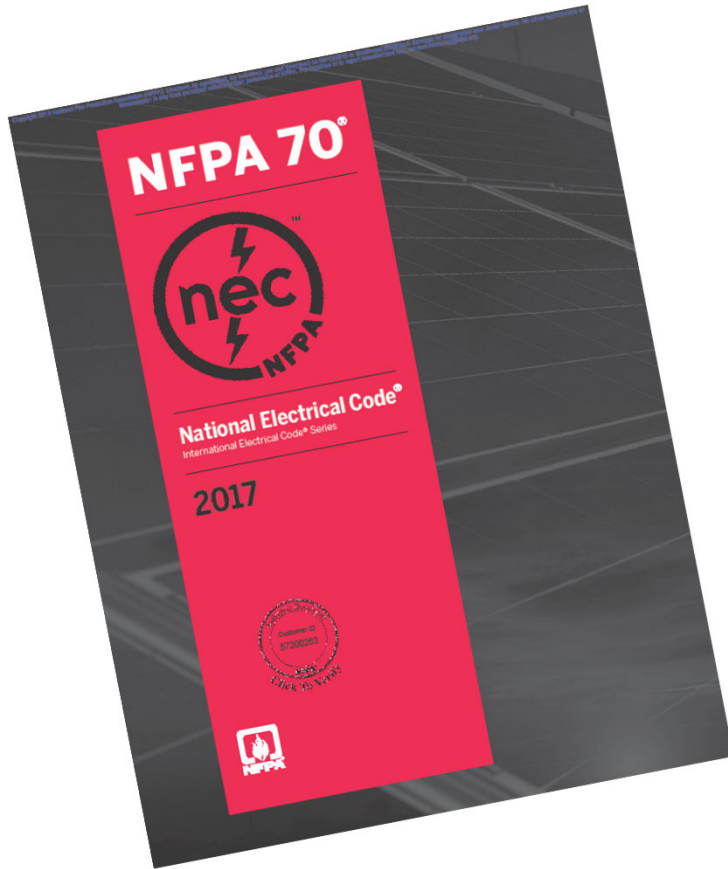
# Typical Reconditioned Equipment

- Motors
- Contactors
- VFD's
- Relays
- Molded & Insulated Case Breakers
- Air Breakers
- Medium Voltage Breakers
- Switchboards
- Switchgear
- Safety Switches
- Transfer Switches
- Relays



# Reconditioned Equipment

- Based on the 2017 NEC and 2020 NEC



ELECTRICAL PROFESSIONAL CONSULTANTS

# NEC Process Simplified

- Request for Proposals/Public Input
- NEC Panels (18) - 1<sup>st</sup> Draft from Public Input
  - Accept Input and form a first revision
  - Reject Input
- Review Public Comment
- NEC Panels 2<sup>nd</sup> Draft
  - No New Proposals considered
  - Only comments to accepted on previously input proposals
- Review and Ballot Voting
- Comments on Floor at NFPA Conference
- Comments/Appeal at Standards Council Mtg



# 2017 NEC

- Examination, Identification, Installation, Use and Listing 110.3 (A) (1)

Suitable for use.....

**Informational Note:**

Equipment may be new, reconditioned, refurbished, or remanufactured



ELECTRICAL PROFESSIONAL CONSULTANTS

---

© 2021-Electrical Professional Consultants



# 2017 NEC

- **Markings 110.21 (A) (2)**

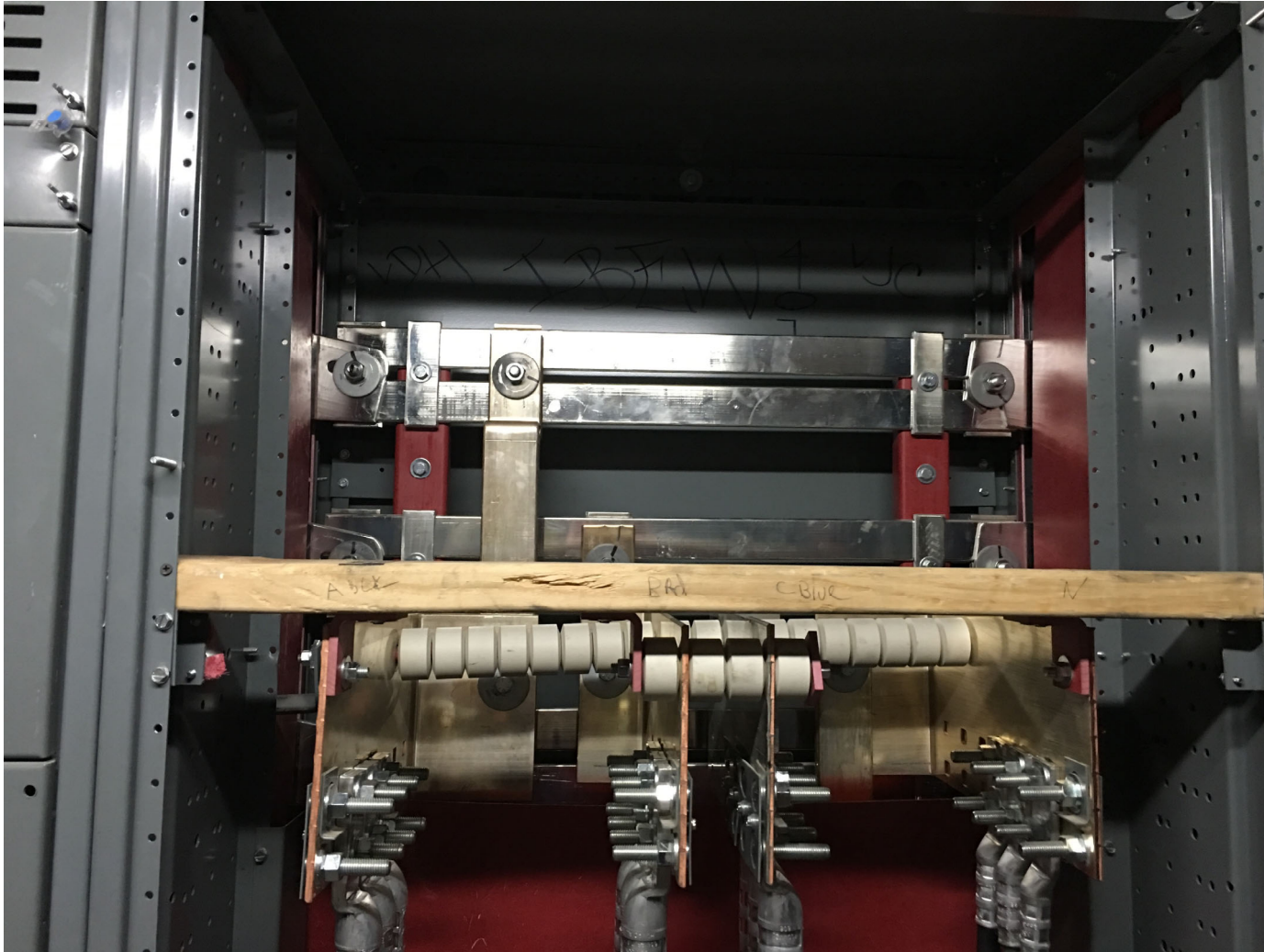
## **Reconditioned Equipment:**

1. Shall be marked with the name of organization responsible for reconditioning
2. Date of the reconditioning
3. Reconditioned equipment shall be identified as “reconditioned”
4. *Approval of the reconditioned equipment shall not be based solely on the equipment’s original listing.*





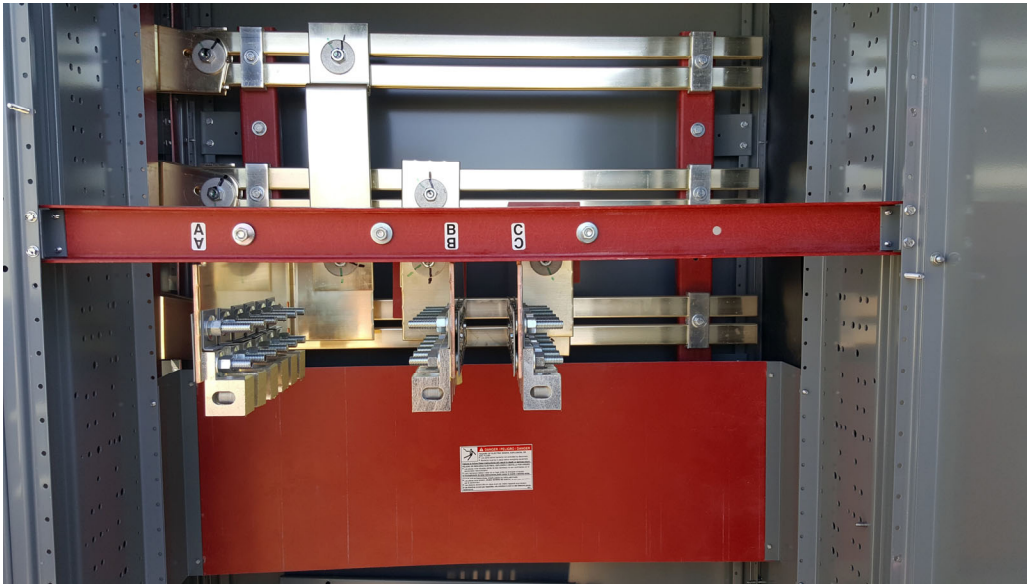
# Reconditioning



ELECTRICAL PROFESSIONAL CONSULTANTS

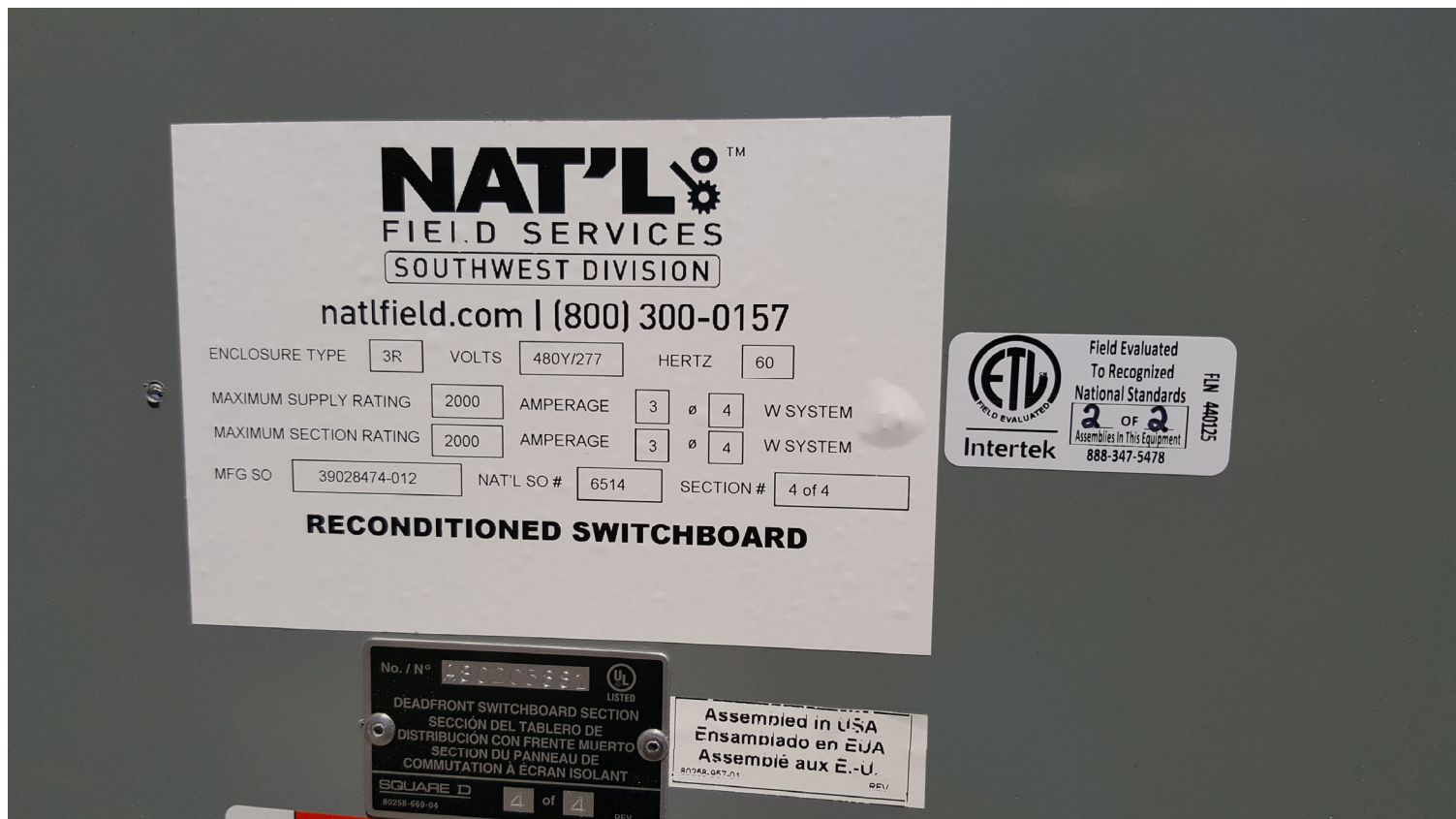
© 2021-Electrical Professional Consultants

# Reconditioned Equipment



# Labeling Requirements

Reconditioned equipment shall be Identified as Reconditioned



ELECTRICAL PROFESSIONAL CONSULTANTS



# 2020 NEC

- Major changes occurred...
- What happened ?
  - Targeted opposition from UL
  - Targeted opposition from NEMA
  - Targeted opposition from Labor (IBEW & IEC)
  - Targeted opposition from Manufacturers
    - Eaton
    - SE/Square D
- Manufacturers currently provide these services on their own equipment
- Manufacturers currently provide these services on other manufacturer's equipment
- Lock into manufacturer only
- Opposition from PEARL and the manufacturing industry went all the way to the NFPA Standards Council with no success ! So the wording of the 2020 NEC stood !



## 2020 NEC

- Opposition from PEARL was addressed in the 2<sup>nd</sup> draft stage and a presentation was made to the code committee.
- Opposition was addressed on the floor of the NFPA Meeting in 2019, with very limited success
- Opposition from PEARL and the manufacturing industry went all the way to the NFPA Standards Council with no success !
- The wording of the 2020 NEC stood !



# 2020 NEC

- Definition 100 (New !!)

**Reconditioned Equipment:**

Electromechanical systems, equipment, apparatus or components restored to operating condition.

This process differs from normal servicing of equipment that remains within the facility or replacement of listed equipment on a one for one bases.

**Informational Note:** The term reconditioned is frequently referred to as rebuilt, refurbished or remanufactured



## 2020 NEC

- Examination, Identification, Installation, Use and Listing 110.3 (A) (1)

Suitable for use.....

**Informational Note:**

Equipment may be new, reconditioned, refurbished, or remanufactured



ELECTRICAL PROFESSIONAL CONSULTANTS



# 2020 NEC

- Markings 110.21 (A) (2)

**Reconditioned Equipment:**

1. Shall be marked with the name of organization responsible for reconditioning
2. Date of the reconditioning
3. Reconditioned equipment shall be identified as “reconditioned”
4. Original listing mark **removed**
5. *Approval of the reconditioned equipment shall not be based solely on the equipment’s original listing.*



# 2020 NEC

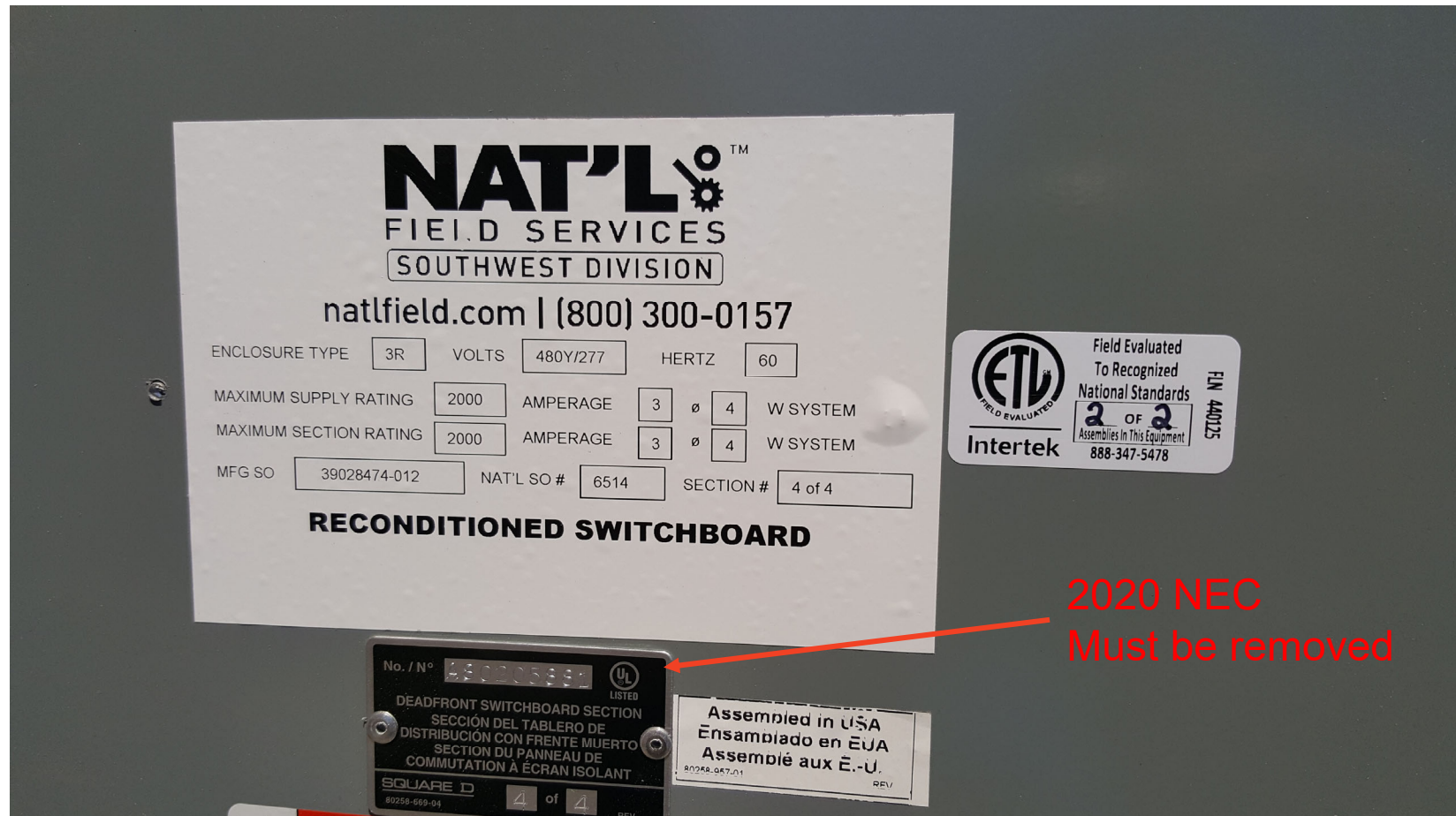
- Exceptions and Informational Notes:

- *Exception:* In industrial occupancies, where conditions of maintenance and supervision ensure that only qualified persons service the equipment, the markings shall not be required for equipment reconditioned by the owner or operator as part of the maintenance program.
- Informational Note: Industrial Standards are available
- Informational Note: The term reconditioned may be interchangeable with **rebuilt, refurbished or remanufactured**
- The original listing mark may include the certifying body marking and not the entire equipment label.



# Labeling Requirements

Reconditioned equipment shall be Identified as Reconditioned



# Reconditioned Equipment

- Where this may cause issues ?
  - Equipment Failures
  - Long Manufacturers lead times
  - Obsolete Equipment
  - Circuit Breakers
  - Motor Control Center Buckets
  - Equipment that cannot be removed from locations



# Equipment Not Suitable

- Equipment that provides ground-fault circuit-interrupter protection for personnel (210.15)
- Equipment that provides arc-fault circuit-interrupter protection (210.15)
- Equipment that provides branch-circuit ground-fault protection of equipment (210.15)
- Low-voltage fuse holders and low-voltage non-renewable fuses (240.62)
- Molded-case circuit breakers (240.88(A)(1))
- Low-voltage power circuit breaker, electronic trip units (240.88(B))
- Medium-voltage fuse holders and medium-voltage non-renewable fuses (240.102)



# Equipment Not Suitable

- Receptacles (406.3(A))
- Attachments plugs, cord connectors, and flanged surface devices (406.7)
- Panelboards (408.8(A))
- Luminaires, lamp holders and retrofit kits (410.7)
- Listed low-voltage lighting systems or a lighting system assembled from listed parts (411.4)
- Fire pump controllers & transfer switches (695.10)
- Transfer switches (700.5(C), 701.5(C), 702.5(A), 708.24(A))



# Equipment Suitable

- Low and medium-voltage power circuit breakers (240.88(A)(2))
- High-voltage circuit breakers (240.88(A)(3))
- Electromechanical protective relays and current transformers (240.88(B)(2))
- Switchboards and switchgear, or sections of switchboards and switchgear (408.8(B), 490.49)





# Breakers

- Breaker reconditioning evaluation



**YES**



**YES**



**NO**



**NO**



ELECTRICAL PROFESSIONAL CONSULTANTS

---

© 2021-Electrical Professional Consultants

# Facts

- UL Listing only represents compliance when equipment left the factory
- UL currently has a recon program they want to protect
- Prohibited of recon equipment is “Restraint of Trade”
- Recent 2017 litigation concerning the refilling and reconditioning of toner and ink cartridges from major printer and copier manufacturers. Example: *Impression Products v. Lexmark* went to the supreme court (Lexmark lost)
- Recent cases on reconditioning auto parts from major manufacturers (Lost cases)
- In the case of automotive parts, parts must be properly represented when sold or re-sold, 3 categories: OEM (came from original manufacturer), Reconditioned or Aftermarket



# Facts

- Many manufacturer's service groups use reconditioning equipment dealers to service their customers
- Many reconditioning dealers worked for major manufacturers and know more about the obsolete equipment than the manufacturers do
- Manufacturers promote they can retro-fill, retro-fit older equipment with new breakers no matter the manufacturer
- Many reconditioners have reverse engineered parts to deal with the short comings of manufacturer's parts
- New aftermarket technology such as solid-state equipment is available for use in reconditioning older equipment



# Facts

- The largest US customers of aftermarket retrofit trip units is major manufacturers. Many manufacturers know their own trip units do not hold up over time.



ELECTRICAL PROFESSIONAL CONSULTANTS

# What can you do ?

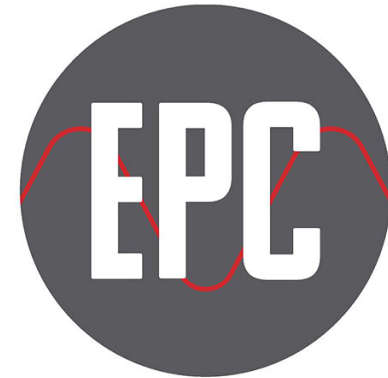
- Purchase from reputable PEARL dealers
- Request a copy of the dealer's liability insurance
- Request a copy of the dealer's equipment test reports
- Watch out for counterfeit devices
- Ask about return policy
- Don't purchase breakers or components from E-Bay
- Request an NRTL – Field listing for major items like switchboards



# Contact Information



**ELECTRICAL SAFETY PROFESSIONALS**



**ELECTRICAL PROFESSIONAL CONSULTANTS**

## **Electrical Qualifications Program**

Office 725-214-6004

- Howard@ElectricalSafetyPro.org
- [WWW.ElectricalSafetyPro.org](http://WWW.ElectricalSafetyPro.org)

## **Electrical Training**

Office 725-214-6004

- HHerndon@Proec.biz
- Howard Herndon 702-595-3129



**ELECTRICAL PROFESSIONAL CONSULTANTS**